Attorney Docket: 1830/50520
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	MASAHIRO IMOTO ET AL.	
Serial No.:	TO BE ASSIGNED	Group Art Unit:
Filed:	CONCURRENT HEREWITH	Examiner:
Title:	MASAHIRO IMOTO ET AL.	

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee and prior to examination, please amend the above-identified application as follows:

IN THE SPECIFICATION

Page 1, line 1, cancel "TECHNICAL FIELD" and insert -- BACKGROUND OF THE INVENTION--

line 11, cancel "BACKGROUND ART"

Page 8, line 7, cancel "DISCLOSURE OF THE INVENTION" and substitute therefor --SUMMARY OF THE INVENTION--

Page 10, line 14, cancel "BEST MODE FOR CARRYING OUT THE INVENTION" and insert --DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--

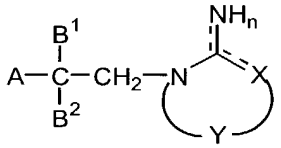
Page 43, line 1, cancel "CLAIMS" and insert --WHAT IS CLAIMED IS:--

Page 48, line 1, cancel "ABSTRACT" and insert --ABSTRACT OF THE DISCLOSURE--

IN THE CLAIMS

Please amend Claims 1, 3-6, and 8-12 as follows:

1. (Amended) Heterocyclic compounds represented by the formula (I):



(I)

wherein:

A is an optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group;

B^1 and B^2 are each a hydrogen atom; an alkyl group; or a hydroxyl group; or combined together form a carbonyl group;

X is an oxygen atom; sulfur atom; carbon atom; or nitrogen atom;

the dotted line shows either the presence or absence of a bond;

n is an integer of 1 or 2; and

Y is:

(1) when X is an oxygen atom, the group -Y-X- is $-CH_2-CH_2-O-$ or $-CH_2-CH_2-CH_2-O-$;

(2) when X is a sulfur atom, the group -Y-X- is $-CH_2-CH_2-S-$ or $-C(R^1)=C(R^2)-S-$, wherein R^1 and R^2 are each a hydrogen atom; halogen atom;

optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group;

(3) when X is a carbon atom, the group -Y-X- is $-CH_2-CH_2-CH_2-$, $-CH_2-CH_2-CH_2-CH_2-$, $-CH=C(R^3)-C(R^4)=CH-$ or $-N=C(R^5)-C(R^6)=CH-$, wherein R^3, R^4, R^5 and R^6 are each a hydrogen atom; halogen atom; optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group; and,

(4) when X is a nitrogen atom, the group -Y-X- is $-CH_2-CH_2-NH-$, $-CH_2-CH_2-CH_2-NH-$, $-C(R^7)=C(R^8)-N=$, or $-C(R^9)=C(R^{10})-C(R^{11})=N-$, wherein R^7, R^8, R^9, R^{10} and R^{11} are each a hydrogen atom; halogen atom; optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group;

or pharmaceutically acceptable salts thereof.

3. (Amended) A composition useful as an activator for $\alpha4\beta2$ nicotinic acetylcholine receptors comprising the compound or pharmaceutically acceptable salt thereof claimed in claim 1 or 2, as the active ingredient.

4. (Amended) A composition according to claim 3, wherein said activators are agonists or modulators at $\alpha4\beta2$ nicotinic acetylcholine receptors.

5. (Amended) A medicament for preventing or treating cerebral circulation diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

6. (Amended) A medicament for preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

8. (Amended) A medicament for improving cerebral metabolism, neurotransmission functional disorder and memory disorder, for protecting the brain, or for providing analgesic effect, which comprises an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

9. (Amended) A medicament for preventing or treating inflammatory intestinal diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

10. (Amended) A method of activating α4β2 nicotinic acetylcholine receptors in a patient comprising administering an effective amount of a compound as claimed in claim 1 or 2 to said patient.

11. (Amended) A method of preventing or treating cerebral circulation diseases which comprises administering an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

12. (Amended) A method of preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease which comprises administering an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3.

Please insert the following new claims:

14. (New) A medicament for preventing or treating cerebral circulation diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

15. (New) A medicament for preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

16. (New) The medicament according to claim 15, wherein said neurodegenerative disease is Alzheimer's disease or Parkinson's disease, said dementia is cerebrovascular dementia, said motor ataxia is Tourette's syndrome, and said neuropathy and mental disease is neurosis during chronic cerebral infarction stage, anxiety or schizophrenia.

17. (New) A medicament for improving cerebral metabolism, neurotransmission functional disorder and memory disorder, for protecting the brain, or for providing analgesic effect, which comprises an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

18. (New) A medicament for preventing or treating inflammatory intestinal diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

19. (New) A method of preventing or treating cerebral circulation diseases which comprises administering an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

20. (New) A method of preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease which comprises administering an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 4.

21. (New) The method according to claim 20, wherein said neuro-degenerative disease is Alzheimer's disease or Parkinson's disease, said dementia is cerebrovascular dementia, said motor ataxia is Tourette's syndrome, and said neuropathy and mental disease is neurosis during chronic cerebral infarction stage, anxiety or schizophrenia.

22. (New) A composition according to claim 3, further comprising a pharmaceutically acceptable carrier or excipient for oral or parenteral administration.

23. (New) A composition according to claim 22, wherein said carrier or excipient is selected from the group consisting of polyvinyl pyrrolidone, gum arabic, gelatin, sorbitol, cyclodextrin, magnesium stearate, talc, polyethylene glycol, polyvinyl alcohol, silica, lactose, crystalline cellulose, sugar, starch, calcium phosphate, vegetable oil, carboxymethyl-cellulose, hydroxypropylcellulose, sodium lauryl sulfate, water, ethanol, glycerol, mannitol, syrup and mixtures thereof.

24. (New) A composition according to claim 23 in unit dosage form.

25. (New) A composition according to claim 22, wherein said carrier is an isotonic solution.

26. (New) A method according to claim 10, comprising administering said compound orally.

27. (New) A method according to claim 26, wherein said effective amount is about 0.001-1,000 mg/kg body weight.

28. (New) A method according to claim 27, wherein said effective amount is 0.01-100 mg/kg body weight.

29. (New) A method according to claim 28, wherein said effective amount is 0.1-10 mg/kg body weight.

30. (New) A method according to claim 10, comprising administering said compound parenterally.

31. (New) A method according to claim 30, wherein said effective amount is about 0.00001-10 mg/kg body weight, from one to three times per day.

32. (New) A method according to claim 31, wherein said effective amount is 0.001-1 mg/kg body weight.

33. (New) A method according to claim 32, wherein said effective amount is 0.001-0.1 mg/kg body weight.

34. (New) Compounds according to claim 1, wherein the pharmaceutically acceptable salt is a salt of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, fumaric acid, maleic acid, oxalic acid, citric acid, tartaric acid, malic acid, lactic acid, succinic acid, benzoic acid, methanesulfonic acid, and p-toluenesulfonic acid.

REMARKS

It is respectfully requested that the above amendments be entered prior to calculation of the filing fee and prior to examination. The amendments have been made to place the application in better form for U.S. practice and to round out the coverage to which Applicants are entitled. No new matter has been added.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

Respectfully submitted,

December 11, 2001

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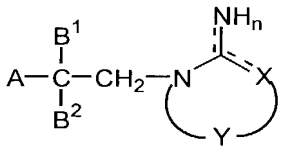
APPENDIX

IN THE CLAIMS

Please amend Claims 1, 3-6, and 8-12 as follows:

1. (Amended) Heterocyclic compounds represented by the [following formual] formula (I):



(I)

wherein:

A is an optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group;

B^1 and B^2 are[,] each a hydrogen atom; an alkyl group; or a hydroxyl group; or combined together [to represent] form a carbonyl group;

X is an oxygen atom; sulfur atom; carbon atom; or nitrogen atom;

the dotted line shows either the presence or absence of a bond;

n is an integer of 1 or 2; and

Y is[,] :

(1) [in the case of] when X is an oxygen atom, the group -Y-X- is $-CH_2-CH_2-O-$ or $-CH_2-CH_2-CH_2-O-$;

(2) [in the case of] when X is a sulfur atom, the group -Y-X- is $-CH_2-CH_2-S-$ or $-C(R^1)=C(R^2)-S-$, wherein [(in which,] R^1 and R^2 are each a hydrogen atom; halogen atom; optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group[)];

(3) [in the case of] when X is a carbon atom, the group -Y-X- is -CH_2-CH_2-CH_2-, -CH_2-CH_2-CH_2-CH_2-, -CH=C(R^3)-C(R^4)=CH- or -N=C(R^5)-C(R^6)=CH-, wherein [(in which,] R^3, R^4, R^5 and R^6 are each a hydrogen atom; halogen atom; optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group[)]; and,

(4) [in the case of] when X is a nitrogen atom, the group -Y-X- is -CH_2-CH_2-NH-, -CH_2-CH_2-CH_2-NH-, -C(R^7)=C(R^8)-N=, or -C(R^9)=C(R^{10})-C(R^{11})=N-, wherein [(in which,] R^7, R^8, R^9, R^{10} and R^{11} are each a hydrogen atom; halogen atom; optionally substituted alkyl group; optionally substituted aryl group; or optionally substituted heterocyclic group[)];
or pharmaceutically acceptable salts thereof.

3. (Amended) [Activators] A composition useful as an activator for $\alpha4\beta2$ nicotinic acetylcholine receptors [containing] comprising the compound or pharmaceutically acceptable salt thereof claimed in claim 1 or 2, as the active ingredient.

4. (Amended) [The activators for $\alpha4\beta2$ nicotinic acetylcholine receptors] A composition according to claim 3, wherein said activators are agonists or modulators at $\alpha4\beta2$ nicotinic acetylcholine receptors.

5. (Amended) A medicament for preventing or treating cerebral circulation diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].

6. (Amended) A medicament for preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].

8. (Amended) A medicament for improving [the] cerebral metabolism, neurotransmission functional disorder and memory disorder, for protecting the brain, or [having] for providing analgesic effect, which comprises an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].

9. (Amended) A medicament for preventing or treating inflammatory intestinal diseases comprising an effective amount of the activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].

10. (Amended) [The use of the compounds claimed in claim 1 or 2 as the activators for] A method of activating α4β2 nicotinic acetylcholine receptors in a patient comprising administering an effective amount of a compound as claimed in claim 1 or 2 to said patient.

11. (Amended) [The] A method of preventing or treating cerebral circulation diseases which comprises administering [activators] an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].

12. (Amended) [The] A method of preventing or treating neurodegenerative disease, dementia, motor ataxia, and neuropathy and mental disease which comprises administering [activators] an effective amount of an activator for α4β2 nicotinic acetylcholine receptors claimed in claim 3 [or 4].